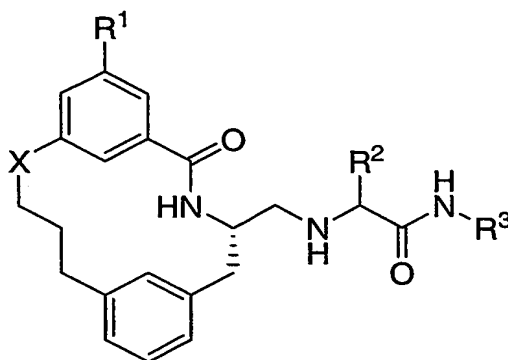


## WHAT IS CLAIMED IS:

1. A compound of the formula I:



I

wherein:

R<sup>1</sup> is selected from the group consisting of:

- (1) hydrogen,
- (2) R<sup>4</sup>-S(O)<sub>p</sub>N(R<sup>5</sup>)-,

wherein R<sup>4</sup> is independently selected from the group consisting of:

- (a) -C<sub>1-8</sub>alkyl, which is unsubstituted or substituted with 1-6 fluoro,
- (b) -NR<sup>5</sup>R<sup>6</sup>,
- (c) phenyl, and
- (d) benzyl,

wherein R<sup>5</sup> and R<sup>6</sup> are independently selected from the group consisting of:

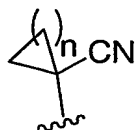
- (a) hydrogen,
- (b) -C<sub>1-6</sub>alkyl, which is unsubstituted or substituted with 1-6 fluoro,
- (c) phenyl, and
- (d) benzyl,

and wherein p is independently 0, 1, or 2,

- (3) -CN,
- (4) -C<sub>1-6</sub>alkyl-CN,
- (5) halogen,
- (6) phenyl, which is unsubstituted or substituted with 1-5 substituents where the substituents are independently selected from:

- (a) -CN,
- (b) halo,
- (c) -C<sub>1-6</sub>alkyl,
- (d) -O-R<sup>5</sup>,
- (e) -CO<sub>2</sub>R<sup>5</sup>, and
- (f) -C(O)R<sup>5</sup>,

(7)



wherein n is 1, 2, 3 or 4;

R<sup>2</sup> is selected from the group consisting of:

- (1) hydrogen,
- (2) -C<sub>1-6</sub>alkyl, -C<sub>2-6</sub>alkenyl, -C<sub>2-6</sub>alkynyl, or -C<sub>3-8</sub>cycloalkyl which is unsubstituted or substituted with 1-7 substituents where the substituents are independently selected from:
  - (a) halo,
  - (b) hydroxy,
  - (c) -O-C<sub>1-6</sub>alkyl,
  - (d) -C<sub>3-6</sub>cycloalkyl,
  - (e) -S(O)<sub>p</sub>-C<sub>1-6</sub>alkyl,
  - (f) -CN,
  - (g) -CO<sub>2</sub>H,
  - (h) -CO<sub>2</sub>-C<sub>1-6</sub>alkyl,
  - (i) -CO-NR<sup>5</sup>R<sup>6</sup>,
  - (j) phenyl, which is unsubstituted or substituted with 1-5 substituents where the substituents are independently selected from:
    - (i) -C<sub>1-6</sub>alkyl,
    - (ii) -CN,
    - (iii) halo,
    - (iv) -CF<sub>3</sub>,
    - (v) -O-R<sup>5</sup>, and
    - (vi) -CO<sub>2</sub>R<sup>5</sup>,

- (3) phenyl which is unsubstituted or substituted with 1-5 substituents where the substituents are independently selected from:

- (a) -C<sub>1-6</sub>alkyl,  
(b) -CN,  
(c) halo,  
(d) -CF<sub>3</sub>,  
(e) -O-R<sup>5</sup>, and  
(f) -CO<sub>2</sub>R<sup>5</sup>;

- 10 R<sup>3</sup> is selected from the group consisting of:

- (1) hydrogen,  
(2) -C<sub>1-6</sub>alkyl, -C<sub>2-6</sub>alkenyl, -C<sub>2-6</sub>alkynyl, or -C<sub>3-8</sub>cycloalkyl which is unsubstituted or substituted with 1-7 substituents where the substituents are independently selected from:

- (a) halo,  
(b) hydroxy,  
(c) -O-C<sub>1-6</sub>alkyl,  
(d) -C<sub>3-6</sub>cycloalkyl,  
(e) phenyl or pyridyl, which is unsubstituted or substituted with 1-5 substituents where the substituents are independently selected from:

- (i) -C<sub>1-6</sub>alkyl,  
(ii) -CN,  
(iii) halo,  
(iv) -CF<sub>3</sub>,  
(v) -O-R<sup>5</sup>, and  
(vi) -CO<sub>2</sub>R<sup>5</sup>,

- (f) -S(O)<sub>p</sub>N(R<sup>5</sup>)-C<sub>1-6</sub>alkyl, and  
(g) -S(O)<sub>p</sub>N(R<sup>5</sup>)-phenyl,

- (3) phenyl which is unsubstituted or substituted with 1-5 substituents where the substituents are independently selected from:

- (a) -C<sub>1-6</sub>alkyl,  
(b) -CN,  
(c) halo,  
(d) -CF<sub>3</sub>,

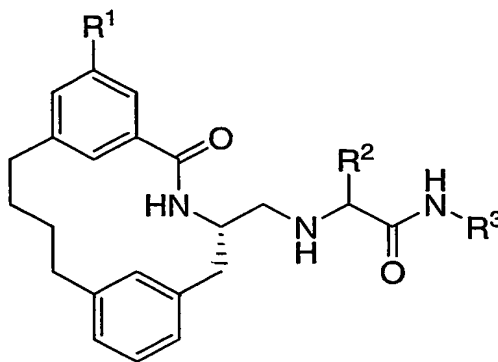
- (e) -O-R<sup>5</sup>, and  
 (f) -CO<sub>2</sub>R<sup>5</sup>;

X is selected from the group consisting of:

- (1) -CH<sub>2</sub>-, and  
 (2) -O-;

and pharmaceutically acceptable salts thereof.

2. The compound of Claim 1 of the formula II:



II.

3. The compound of Claim 2 wherein:

R<sup>1</sup> is selected from:

- (1) CH<sub>3</sub>-S(O)<sub>2</sub>N(CH<sub>3</sub>)<sub>2</sub>-;  
 (2) CH<sub>3</sub>CH<sub>2</sub>-S(O)<sub>2</sub>N(CH<sub>3</sub>)<sub>2</sub>-;  
 (3) (CH<sub>3</sub>)<sub>2</sub>CH-S(O)<sub>2</sub>N(CH<sub>3</sub>)<sub>2</sub>-;  
 (4) phenyl-S(O)<sub>2</sub>N(CH<sub>3</sub>)<sub>2</sub>-; and  
 (5) (CH<sub>3</sub>)<sub>2</sub>N-S(O)<sub>2</sub>N(CH<sub>3</sub>)<sub>2</sub>-;

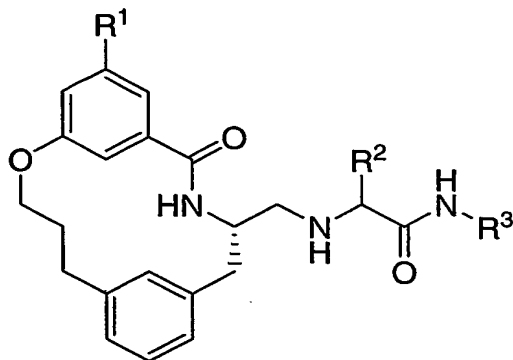
R<sup>2</sup> is -C<sub>1</sub>-6alkyl, unsubstituted or substituted with cyclopropyl or halo;

R<sup>3</sup> is -C<sub>1</sub>-6alkyl or -C<sub>3</sub>-8cycloalkyl; and

X is -CH<sub>2</sub>- or -O-;

and pharmaceutically acceptable salts thereof.

4. The compound of Claim 1 of the formula III:



III.

5. The compound of Claim 1 wherein:

R<sup>1</sup> is selected from:

- (1) CH<sub>3</sub>-S(O)<sub>2</sub>N(CH<sub>3</sub>)-;
- (2) CH<sub>3</sub>CH<sub>2</sub>-S(O)<sub>2</sub>N(CH<sub>3</sub>)-;
- (3) (CH<sub>3</sub>)<sub>2</sub>CH-S(O)<sub>2</sub>N(CH<sub>3</sub>)-;
- (4) phenyl-S(O)<sub>2</sub>N(CH<sub>3</sub>)-; and
- (5) (CH<sub>3</sub>)<sub>2</sub>N-S(O)<sub>2</sub>N(CH<sub>3</sub>)-;

R<sup>2</sup> is -C<sub>1-6</sub>alkyl, unsubstituted or substituted with cyclopropyl or halo;

R<sup>3</sup> is -C<sub>1-6</sub>alkyl or -C<sub>3-8</sub>cycloalkyl; and

X is -CH<sub>2</sub>- or -O-;

and pharmaceutically acceptable salts thereof.

6. The compound of Claim 1 wherein:

R<sup>1</sup> is R<sup>4</sup>-S(O)<sub>2</sub>N(R<sup>5</sup>)-,

wherein R<sup>4</sup> is independently selected from the group consisting of:

- (a) -C<sub>1-6</sub>alkyl, which is unsubstituted or substituted with 1-6 fluoro,
- (b) phenyl, and
- (c) benzyl,

and wherein R<sup>5</sup> is independently selected from the group consisting of:

- (a) hydrogen,
- (b) -C<sub>1-6</sub>alkyl, which is unsubstituted or substituted with 1-6 fluoro,

(c) phenyl, and

(d) benzyl.

7. The compound of Claim 6 wherein  $R^1$  is selected from:

- (1)  $\text{CH}_3\text{-S(O)}_2\text{N(CH}_3\text{)-}$ ;
- (2)  $\text{CH}_3\text{CH}_2\text{-S(O)}_2\text{N(CH}_3\text{)-}$ ;
- (3)  $(\text{CH}_3)_2\text{CH-S(O)}_2\text{N(CH}_3\text{)-}$ ; and
- (4) phenyl- $\text{S(O)}_2\text{N(CH}_3\text{)-}$ ;
- (5)  $(\text{CH}_3)_2\text{N-S(O)}_2\text{N(CH}_3\text{)-}$ .

8. The compound of Claim 7 wherein  $R^1$  is  $\text{CH}_3\text{-S(O)}_2\text{N(CH}_3\text{)-}$ .

9. The compound of Claim 1 wherein  $R^2$  is  $\text{-C}_1\text{-}_6$ alkyl, unsubstituted or substituted with cyclopropyl or halo.

10. The compound of Claim 9 wherein  $R^2$  is selected from:

- (1)  $\text{CH}_3\text{-}$ ;
- (2)  $\text{CH}_3\text{CH}_2\text{-}$ ;
- (3)  $(\text{CH}_3)_2\text{CH-}$ ;
- (4)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{-}$ ;
- (5)  $(\text{CH}_3)_2\text{CHCH}_2\text{-}$ ;
- (6)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{-}$ ;
- (7)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{-}$ ;
- (8) cyclopropyl- $\text{CH}_2\text{-}$ ;
- (9)  $\text{CF}_3\text{CH}_2\text{-}$ ; and
- (10)  $\text{CH}_2\text{FCH}_2\text{-}$ .

11. The compound of Claim 1 wherein  $R^3$  is  $\text{-C}_1\text{-}_6$ alkyl or  $\text{-C}_3\text{-}_8$ cycloalkyl.

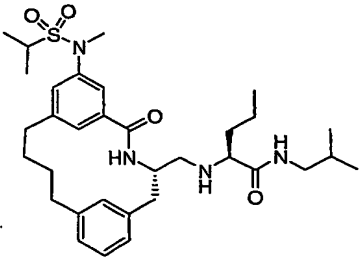
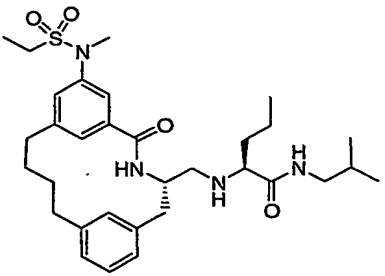
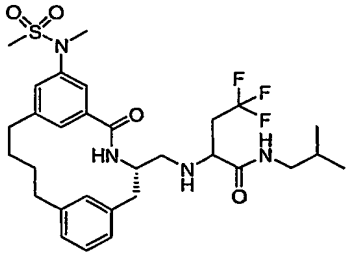
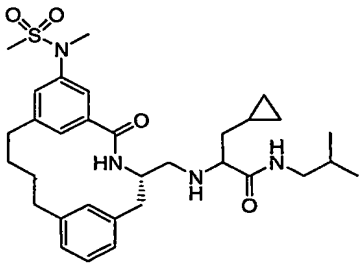
12. The compound of Claim 11 wherein  $R^3$  is selected from:

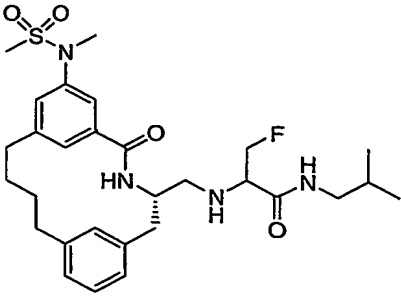
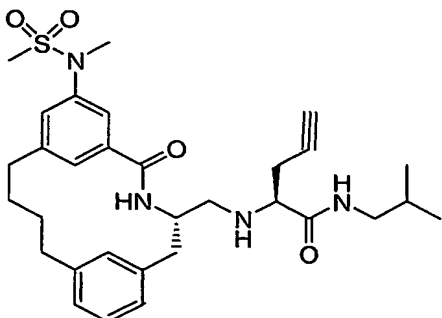
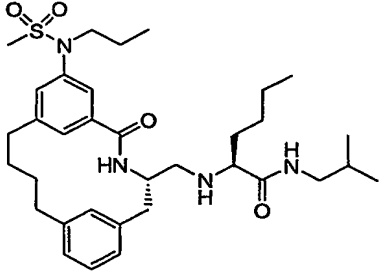
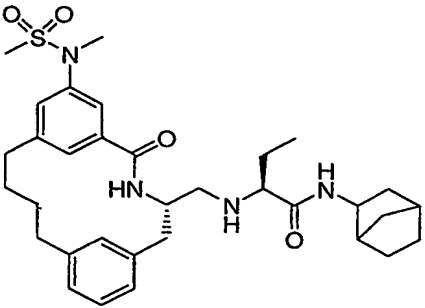
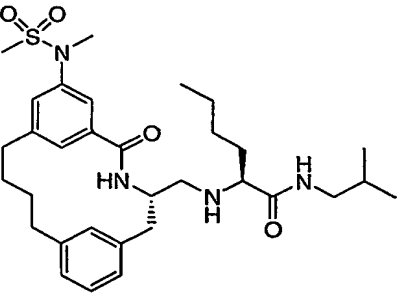
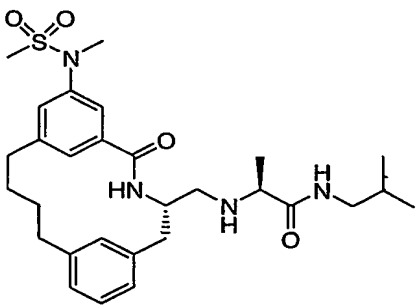
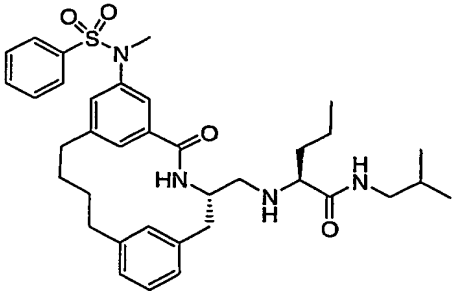
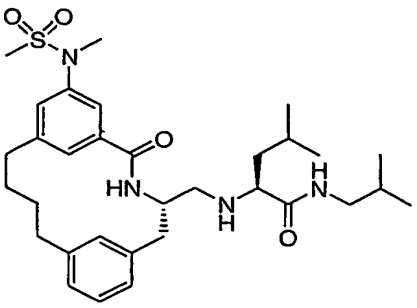
- (1)  $\text{CH}_3\text{-}$ ;
- (2)  $\text{CH}_3\text{CH}_2\text{-}$ ;
- (3)  $(\text{CH}_3)_2\text{CH-}$ ;

- (4)  $\text{CH}_3\text{CH}_2\text{CH}_2-$ ;  
 (5)  $(\text{CH}_3)_2\text{CHCH}_2-$ ;  
 (6)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2-$ ;  
 (7)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-$ ; and  
 (8) bicyclo[2.2.1]heptyl-.

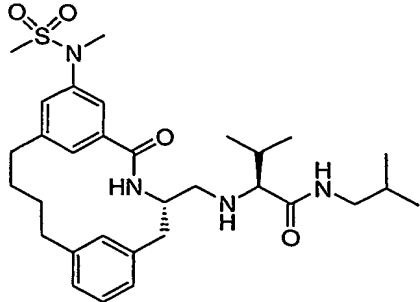
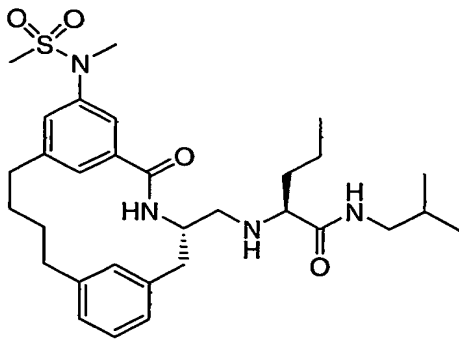
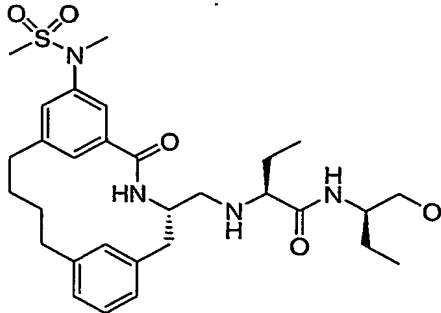
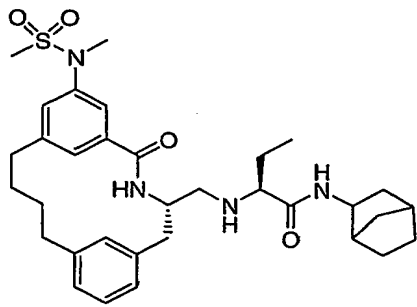
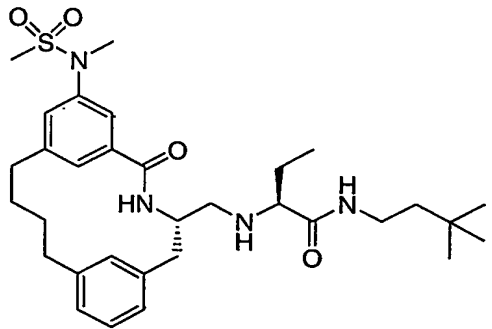
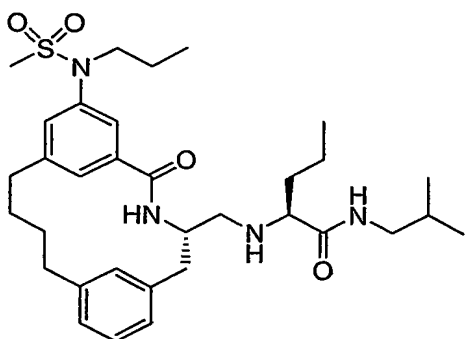
13. The compound of Claim 12 wherein  $\text{R}^3$  is  $(\text{CH}_3)_2\text{CHCH}_2-$ .

14. A compound which is selected from the group consisting of:

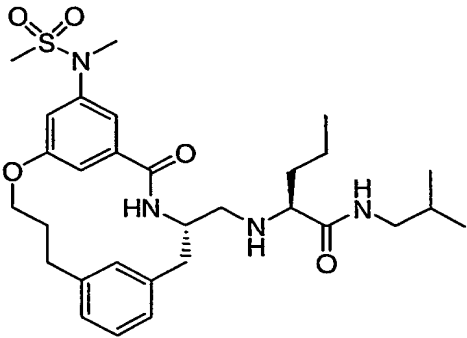
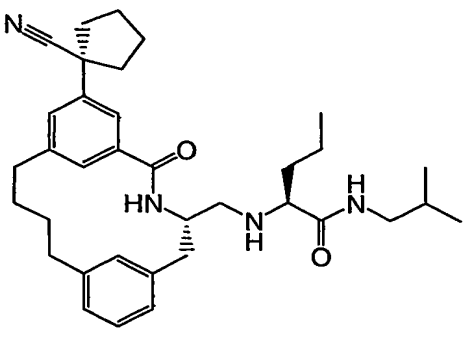
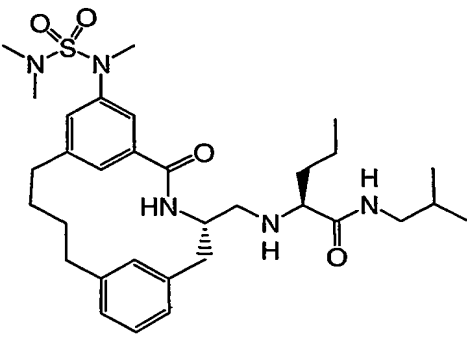
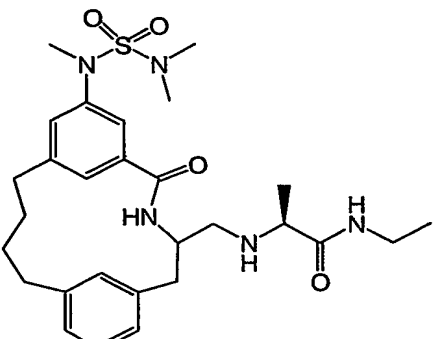
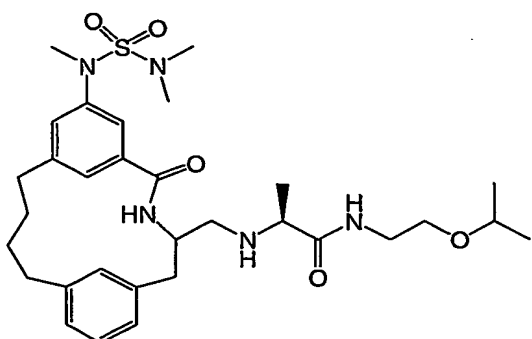
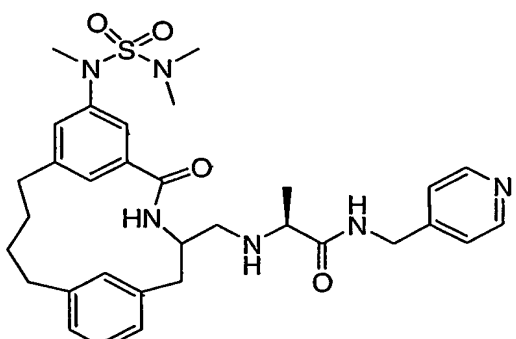
Ex	Structure	Ex	Structure
2		3	
4		5	

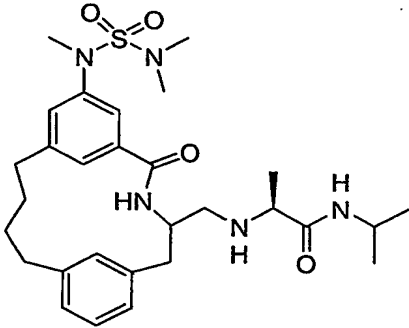
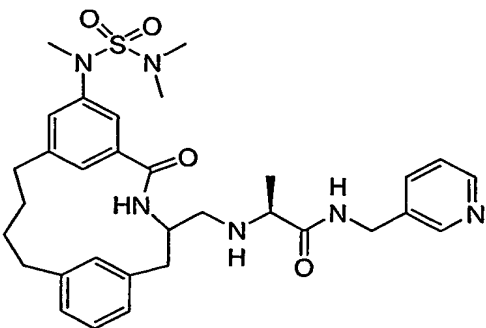
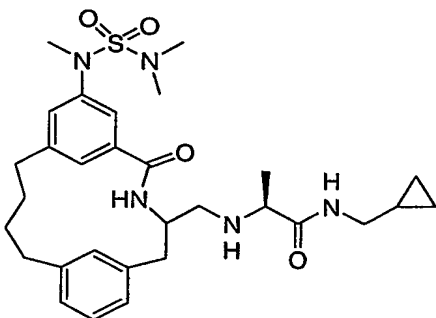
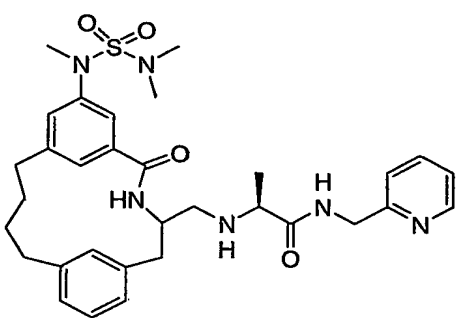
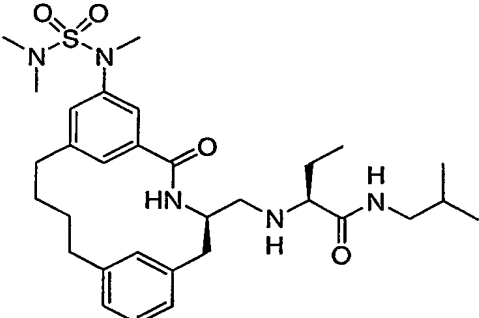
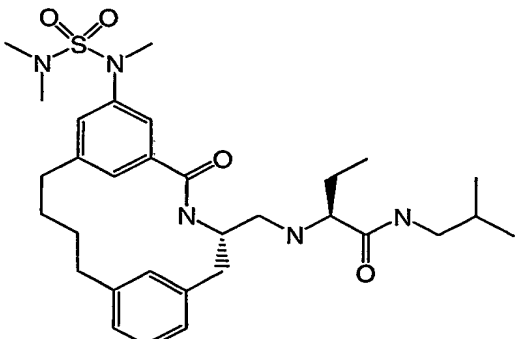
Ex	Structure	Ex	Structure
6		7	
8		9	
10		11	
12		13	



Ex	Structure	Ex	Structure
14		15	
16		17	
18		19	

Ex	Structure	Ex	Structure
20	 <chem>CCN(C)S(=O)(=O)C1=CC=C(C(=O)N[C@@H](C[C@H](C)NC(=O)NCC)CC2=CC=CC=C2CC1</chem>	21	 <chem>CCN(C)S(=O)(=O)C1=CC=C(C(=O)N[C@@H](C[C@H](C)NC(=O)NCC)CC2=CC=CC=C2CC1</chem>
22	 <chem>CCN(C)S(=O)(=O)C1=CC=C(C(=O)N[C@@H](C[C@H](C)NC(=O)NCC)CC2=CC=CC=C2CC1</chem>	23	 <chem>CCN(C)S(=O)(=O)C1=CC=C(C(=O)N[C@@H](C[C@H](C)NC(=O)NCC)CC2=CC=CC=C2CC1</chem>
24	 <chem>CCN(C)S(=O)(=O)C1=CC=C(C(=O)N[C@@H](C[C@H](C)NC(=O)NCC)CC2=CC=CC=C2CC1</chem>	25	 <chem>CCN(C)S(=O)(=O)C1=CC=C(C(=O)N[C@@H](C[C@H](C)NC(=O)NCC)CC2=CC=CC=C2CC1</chem>

Ex	Structure	Ex	Structure
26		27	
28		29	
30		31	

Ex	Structure	Ex	Structure
32		33	
34		35	
36		37	

and pharmaceutically acceptable salts thereof.

15. A pharmaceutical composition comprising an effective amount of a compound of  
 5 Claim 1 and a pharmaceutically acceptable carrier.

16. A method for inhibition of  $\beta$ -secretase activity in a mammal in need thereof which comprises administering to the mammal a therapeutically effective amount of a compound of Claim 1.

5 17. A method for treating Alzheimer's disease in a patient in need thereof comprising administering to the patient an effective amount of a compound of Claim 1.